



## Subtypes of potentially inappropriate medications in older Chinese-Americans during care transitions: Cross sectional retrospective study



Sophia H. Hu <sup>a,1</sup>, Janice B. Foust <sup>b,2</sup>, Marie Boltz <sup>c,3</sup>, Elizabeth Capezuti <sup>d,\*</sup>

<sup>a</sup> School of Nursing, Taipei Medical University, 250 Wu-Hsing Street, Taipei 110, Taiwan, ROC

<sup>b</sup> College of Nursing and Health Sciences, University of Massachusetts Boston, 100 Morrissey Boulevard, Boston, MA 02125, United States

<sup>c</sup> New York University College of Nursing, 726 Broadway, 10th Floor, New York, NY 10003, United States

<sup>d</sup> Hunter-Bellevue School of Nursing, Hunter College of the City University of New York, Brookdale Campus West, Room 526, 425 East 25th Street, New York, NY 10010, United States

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### ABSTRACT

**Background:** The number of Chinese Americans is growing and nearly 20% of older Chinese-American home care patients have at least one potentially inappropriate medications (PIMs) prescribed at hospital discharge. Further examination of PIMs during care transition is warranted, especially among older Chinese-Americans.

**Objectives:** To describe, during care transitions from hospital to home care: (i) the subtypes of PIMs, (ii) the difference of PIM prevalence prescribed at hospital discharge as compared to home care admission, (iii) the relationship between subtypes of PIMs, and (iv) issues affecting medication reconciliation among older Chinese-Americans.

**Methods:** This cross-sectional, retrospective study was conducted in a large urban home care agency from June 2010 to July 2011. From data collected by in-home survey and chart abstraction, PIMs were identified using 2002 diagnosis-independent Beers criteria. The difference of PIM prevalence at hospital discharge and at home care admission was analyzed by Wilcoxon Signed Ranks test. The relationship between subtypes of PIMs was evaluated using Phi coefficient.

**Participants:** 82 older (age 65 years and above) Chinese-American home care patients following recent hospital discharge.

**Results:** 3.38% (22) and another 3.72% (28) of prescribed medications were identified as PIMs at hospital discharge and home care admission, respectively. There was no statistically significant difference in PIM prevalence identified at hospital discharge and at homecare admission ( $z = -1.732$ ,  $p = .083$ ). PIMs included: long-term use of stimulant laxatives and high-dosages of ferrous sulfate, and a significant relationship between these two PIMs ( $r = .224$ ,  $p = .04$ ). More than 80% ( $n = 65$ ) of study participants reported low education levels and limited English proficiency.

**Conclusions:** Subtypes of PIMs were ordered during the post-hospital transfers, indicating the necessity to review the appropriateness of medications during this transition. Guidelines such as Beer's criteria regarding appropriateness of medications should be

\* Corresponding author. Tel.: +1 212 481 7689.

E-mail addresses: [sophiahu@tmu.edu.tw](mailto:sophiahu@tmu.edu.tw) (S.H. Hu), [janice.foust@umb.edu](mailto:janice.foust@umb.edu) (J.B. Foust), [marie.boltz@nyu.edu](mailto:marie.boltz@nyu.edu) (M. Boltz), [ec773@hunter.cuny.edu](mailto:ec773@hunter.cuny.edu), [lizcapoffice@gmail.com](mailto:lizcapoffice@gmail.com), [lizcap65@gmail.com](mailto:lizcap65@gmail.com) (E. Capezuti).

<sup>1</sup> Tel.: +886 2 2736 1661x6319; fax: +886 2 2377 2842.

<sup>2</sup> Tel.: +1 617 287 7535.

<sup>3</sup> Tel.: +1 212 998 5567.

incorporated in medication reconciliation before adding new medications to treat the older adult's health problems. The medication management process needs to be both culturally sensitive and adapted to literacy level; validating the patients' full understanding of their medications is paramount.

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### What is already known about the topic?

- Potentially inappropriate medication (PIM) is a common medication prescription problem among older Chinese-American home care patients following hospital discharge.
- Common subtypes of PIMs (long-acting benzodiazepines, oxybutnin and anticholinergics) among English-speaking populations have been reported in previous studies.
- The common subtypes of PIMs that may threaten the medication safety among older Chinese-Americans have not been previously explored.

### What this paper adds

- Specific subtypes of PIMs identified in older Chinese-Americans during care transitions from hospital discharge to home care include long-term use of stimulant laxatives, high-dosages of ferrous sulfate, cyproheptadine, and amiodarone.
- PIMs at hospital discharge were also present when admitted to home care.
- A significant relationship found between subtypes of PIMs indicates the importance to review side effects of medications before adding a new medication.
- Traditional Chinese Medicine concepts may influence older Chinese Americans' perception of constipation and thus increase the use of long-term use of stimulant laxatives.
- Medication reconciliation with sufficient cultural, language, and literacy support and family involvement is suggested for managing older Chinese-Americans' medications.
- The medication management process needs to be both culturally sensitive and adapted to literacy level; validating the patients' full understanding of their medications is paramount, especially among vulnerable immigrants.

## 1. Introduction

Older patients (age 65 and over) are the largest prescribed medication users in the United States (U.S.) (Kaufman et al., 2002) and vulnerable to medication-related adverse events. Nearly 9 million dollars is spent annually for treating medication-related problems in older Medicare enrollees in the U.S. (Institute of Medicine [IOM], 2006). Potentially inappropriate medications (PIMs) are medications associated with poorer outcomes when prescribed in older adults (The American Geriatrics Society [online], 2012). PIMs may lead to adverse events (Chang

et al., 2005), increased healthcare utilization (Bonk et al., 2006) and costs (Fick et al., 2001, 2008). They can further contribute to patient's medication nonadherence at home (Kripalani et al., 2008; Mansur et al., 2009). Nearly 50% of older patients have at least one PIM upon hospital discharge (Bonk et al., 2006; Edwards et al., 2003; Hajjar et al., 2005), indicating a critical time to review the appropriateness of their medications before leaving the hospital.

Although older Chinese-Americans are among the fastest growing population in the U.S., their health status remains poorly understood (Dong et al., 2011). Immigrants with limited-English proficiency and low levels of education are more likely to have low health literacy, which influences their ability to obtain and process health-related information (IOM, 2004; Kutner et al., 2006). This can place them at high risk for medication reconciliation errors (Gleason et al., 2011; Persell et al., 2007).

Chinese-Americans who live in New York City (NYC), U.S., might be more vulnerable than other Asian subgroups. Chinese-Americans living in NYC have lower education levels compared to national data. The U.S. census reported that more than 70% of older Asians have at least a high school education (U.S. Census Bureau, 2005) while, recent findings reveal more than 70% of older Chinese-Americans in NYC have less than a high school education (Boltz et al., 2011; Shelley et al., 2011). This demonstrates the unique characteristics of this population that should be taken into consideration when providing health care. Hu et al. (2012) reported nearly 24% of older Chinese-American home care patients had at least one PIM at hospital discharge, indicating that PIM is a common medication order problem in this population. Since 87% of older Chinese-Americans are foreign-born (Dong et al., 2011), further investigation of PIMs should be conducted in order to better understand PIMs and how to effectively minimize PIMs in this population.

Safe use of medications is one of the 2013 National Patient Safety Goals in the U.S. (The Joint Commission, 2012a). Medication reconciliation has been suggested as a safety strategy conducted during handoffs to provide continuity of correct medication information so patients know their medications, bring medication lists to physician visits, and ultimately, to help avoid medication errors in many U.S. patient safety organizations (Institute for Healthcare Improvement [IHI], 2008; The Joint Commission, 2012b). Patients returning home that had medication reconciliation after discharge from a skilled nursing facility have been found to have significantly lower mortality rate than patients without medication reconciliation (Delate et al., 2008). Schnipper et al. (2006) conducted a randomized controlled trial evaluating a discharge

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